

**METHOD AND LASER SYSTEM FOR PRODUCTION OF HIGH
QUALITY LASER-INDUCED DAMAGE IMAGES USING MATERIAL
PROCESSING MAKING BEFORE AND DURING IMAGE CREATION**

ABSTRACT OF THE INVENTION

Embodiments of methods and an apparatus for creating high quality laser-induced damage images are disclosed. One or more embodiments of the invention comprise a method for producing laser-induced images inside the special transparent material containing special kinds of impurities, which decrease the damage threshold of the material. Laser radiation is focused inside the transparent material in such a way that focal area contains at least one said impurity. Other embodiments of the invention comprise a method and a system for producing laser-induced images by using two lasers. The first laser generates radiation, which heats the predetermined material area about a point, where breakdown should be produced, to the vitrify temperature. The second laser generates radiation, which creates breakdown in a point of the heated area after the area is heated to the vitrify temperature. The focal spot of the first radiation contains the focal spot of the second radiation and they migrate during production of images so that their positional relationship is not modified.